Extreme Events for Energy Providers

E3P aims at filling a gap between climate science and its practical use in the energy sector, and creating in turn favorable conditions for new business opportunities.

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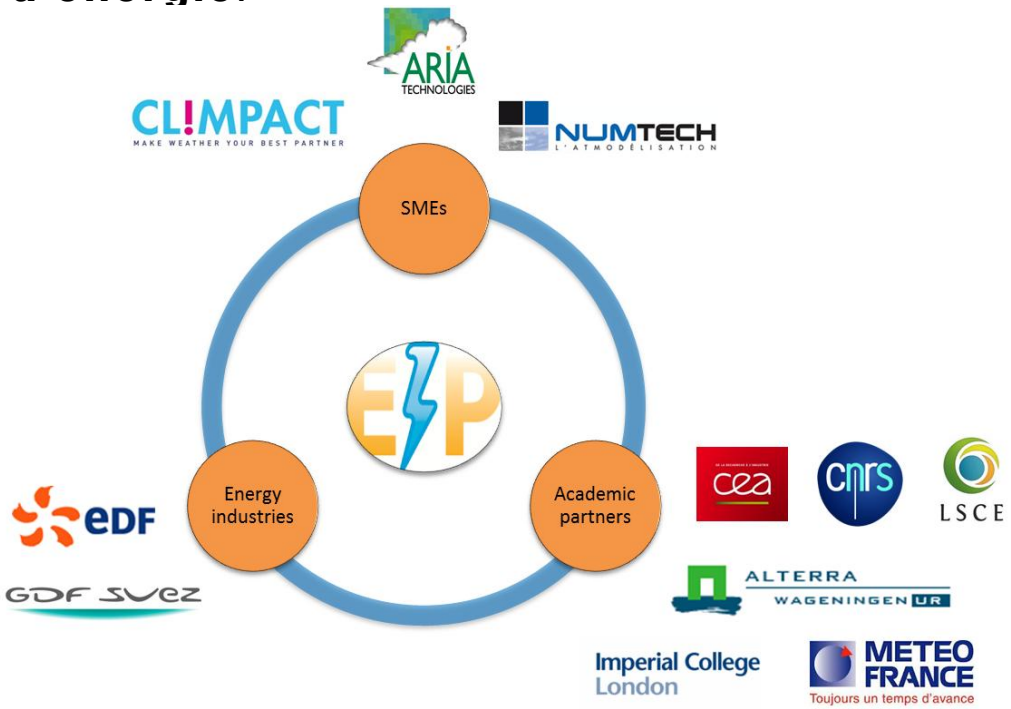
Objectif

- **E3P rassemble scientifiques, PME et industriels autour d'une même table**

- L'étude: **les extrêmes climatiques** (vagues de chaleur, de froid, sécheresse, tempêtes) qui provoquent des pics de demande et affectent **la production d'énergie**.



L'étude de marché

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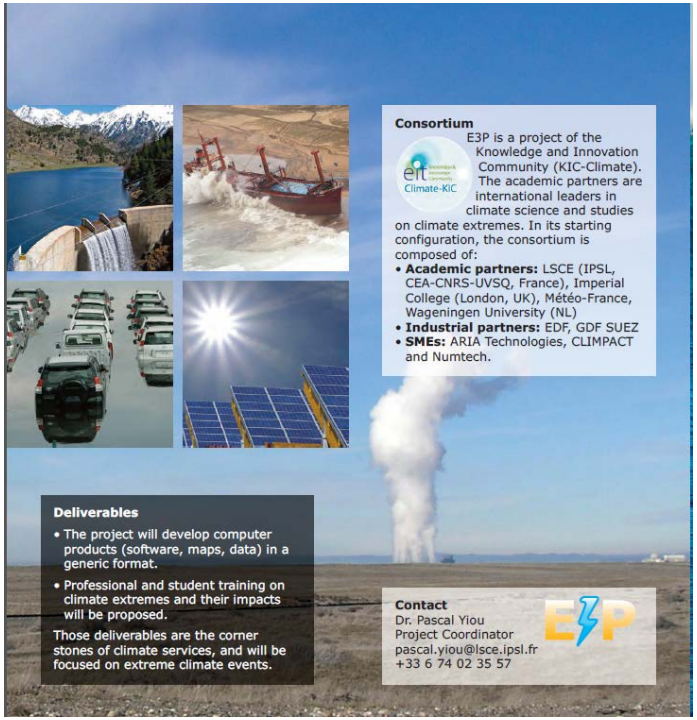
Questionnaire:

- sent to Energy, insurance, re-insurance, water, construction sectors
- ~54 industries/groups listed over 10 countries



L'étude de marché

- **Résultats:**

  - **Wind speed** for distribution sector, **Sea level** increase for nuclear power plant, **flood**
  - The energy providers don't seem to be **not very interested in future climate**.
  - But they are **interested in seasonal forecast**.

Climate is not a big issue as long as the operators are covered by the insurances and they respect the quotas fixed by the State (ex: percentage of days of privation of electricity supply)

- **Réorienter le projet:**

  - Sensibiliser le public et les fournisseurs d'énergie
  - Réaliser des prévisions à moyen terme

Les produits

- **Les indices** préconisés par les grands groupes industriels pour caractériser les vagues de froid

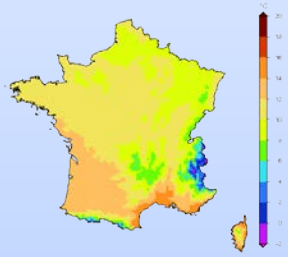
Temperature (tas):

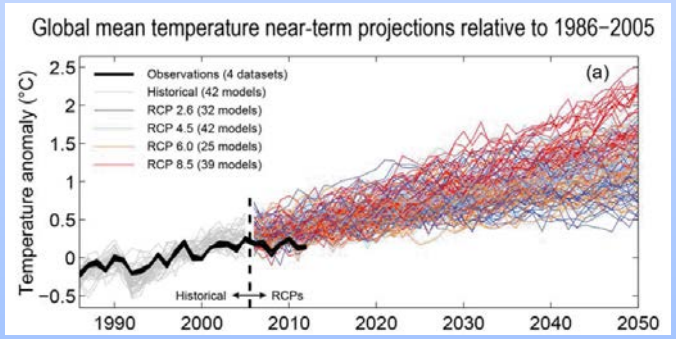
Number of days with temperature below -11 C
Number of days with temperature below 0 C
Number of days with temperature beyond 22.5 C
Number of days with temperature beyond 30 C
Number of days with temperature beyond 35 C
Seasonal Mean (JJM, AMJ, JAS, OND)
Monthly Mean
Wintear Mean (NDJFM)
X% quantile of the winter mean temperature (NDJFM)
Daily Minimum Temperature (tasmin):

Number of days with tasmin below 0 C
Daily Maximum Temperature (tasmax):

Number of days with tasmax beyond 40 C

- **Chaîne de traitement** des bases de données ENSEMBLES, CORDEX, DRIAS, CMIP5 pour calculer les indices



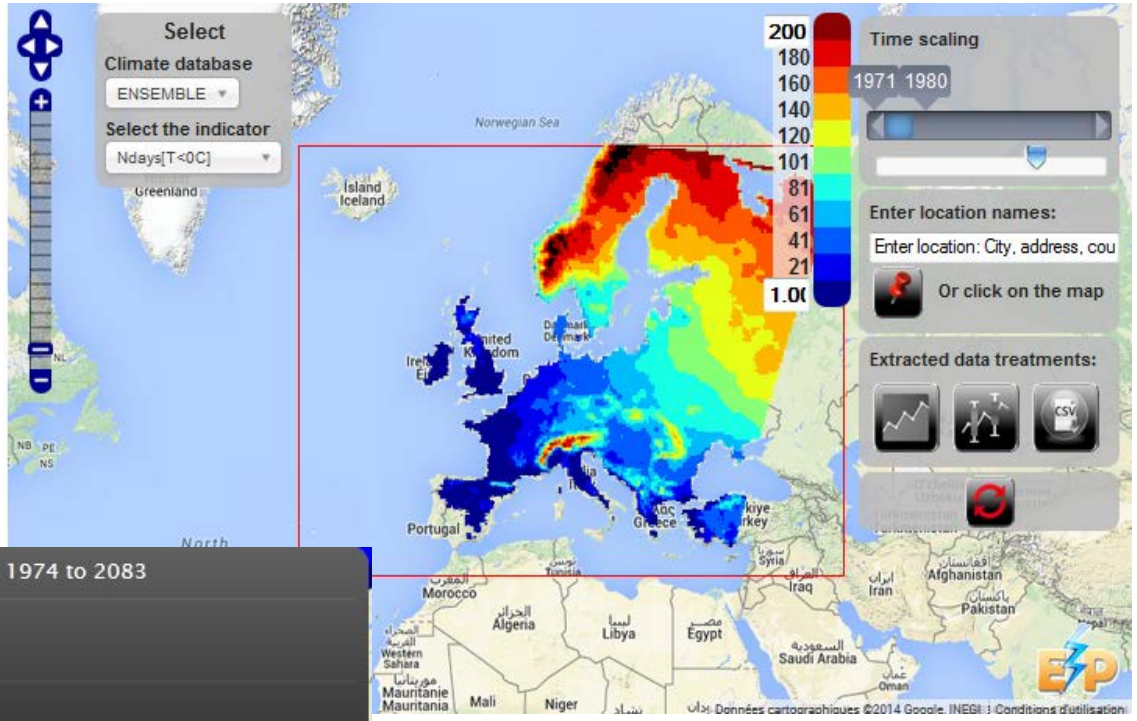


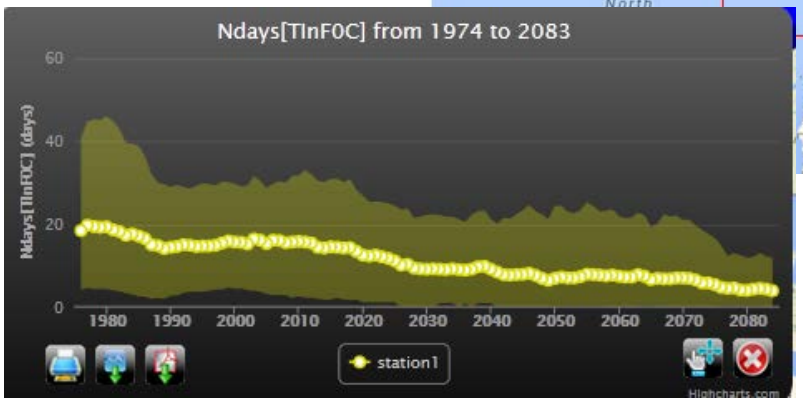
Les produits

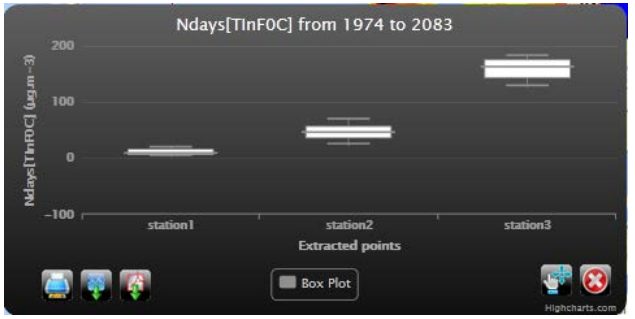
E3Pviz tool: an attractive way to provide interesting information on the future climate

- ENSEMBLES database and EURO-CORDEX (coming soon)
- Temperature, Wind and Precipitation indicators
- Maps, Time series, box plot…
- Free subscription to the website for an access to the expert version

http://web.aria.fr/creator/E3P/index.php





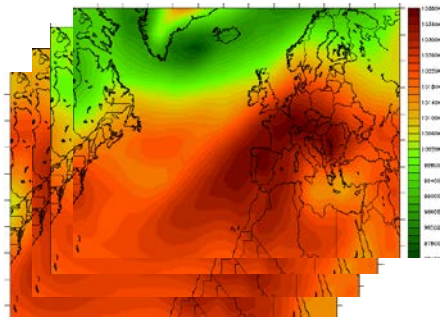


Les produits

AnaWEGE (Yiou 2015)

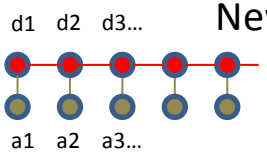
20-years learning database

Daily sea Level Pressure



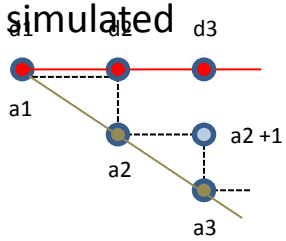
Daily climate variables

- variables: Tmin, Tmax, Tmean, wind, precip
- univariate or multi-variate
- Single station, multi-station or gridded data



New sequence of data to be simulated

Circulation map of d1, d2, d3…

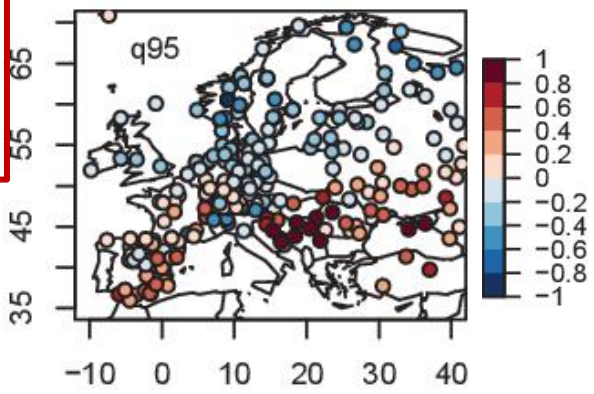


Circulation map of d2, a2+1…

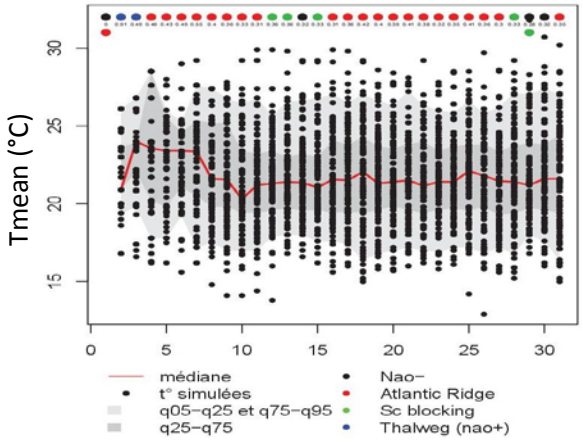
Analog selection from the database + association of climate variable(s)

Simulation of 500 summers

Error on q95 Tmean anomalies (°C)



Forecast – days since 2015/6/26



Merci de votre attention!

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